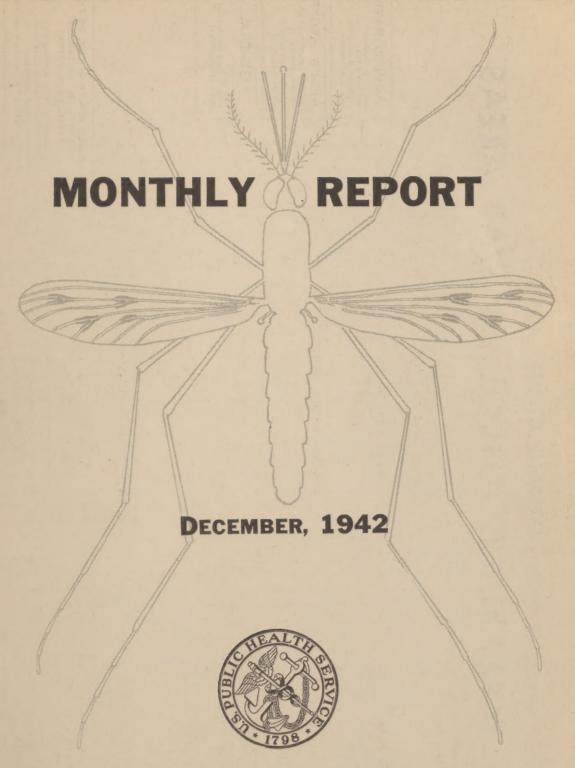
m.e.w.a # 600.66

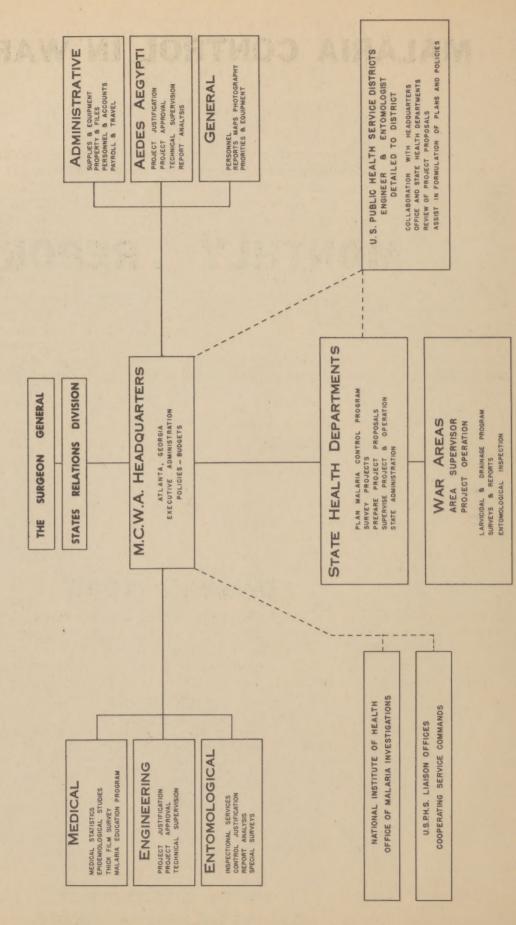
### MALARIA CONTROL IN WAR AREAS



FEDERAL SECURITY AGENCY
U. S. PUBLIC HEALTH SERVICE
ATLANTA, GEORGIA

UNITED STATES PUBLIC HEALTH SERVICE

# MALARIA CONTROL IN WAR AREAS CHART ORGANIZATION



# MONTHLY REPORT Malaria Control in War Areas December 1942

#### SYLLABUS

Winter temperatures reduced anopheline breeding sufficiently in December to permit discontinuance of larvicidal work in all except 20 areas located in Louisiana, Texas and Puerto Rico. Larvicidal oil and Paris green consumptions in December were only 15% and 38% respectively as much as in September when the larvicidal program was at its height. Minor drainage, clearing and channel cleaning operations continued in 104 areas.

There was a sharp increase in the number of major drainage projects during December. Of the 37 projects in operation, 15 were new projects, 14 were begun in November and 8 started in October. Dynamiting for major drainage is used extensively and its use is expected to increase still further as additional projects are started. Termination of the Work Projects Administration on or shortly after February 1, 1943, will make it necessary for the MCWA program to assume responsibility for continuation of certain major drainage projects adjacent to military establishments which are now operating with W. P. A. facilities.

The malaria survey work continued; a total of 19,756 thick film blood slides were stained and some 3,647 slides were examined, but as yet the results of the examinations have not been correlated with data on environmental and other factors influencing malaria transmission.

The educational program began to take definite form. At a conference held this month, plans were projected for the organization of units of visual education materials on malaria and yellow fever to be used in personnel training. Also, work was begun on a series of special reports dealing with medical subjects of importance to the MCWA program.

Aedes aegypti control was extended this month to include San Benito, Texas, operating under the Brownsville unit, and five special areas in the vicinity of Miami, Florida. As cooler weather almost eliminated outdoor breeding of Aedes aegypti in Texas, the crews spent the greater part of December doing indoor inspectional work and making surveys to locate permanent "mother foci" breeders. In Houston, Texas, 100 cisterns were sealed with concrete at an average cost for materials of 35¢ per cistern.

About \$411,195. of Public Health Service funds were encumbered during December, of which about 90% was for personal services.

TABLE I

#### MALARIA CONTROL IN WAR AREAS

#### USPHS LARVICIDE AND MINOR DRAINAGE PROJECTS

DECEMBER 1 - 31, 1942

STATE	Areas	War Estab- lish-			LARVICIDAL WOF	RK				
	Opera-	ments Pro-	Larvio	ide Used Paris	Surfac	es Treated	Ditching &	C	TOTAL	
	Cion	tected	Oil Gals.	Green Lbs.	Ditches Lin.Ft.	Ponds Sq.Ft.	Cleaning Lin.Ft.	Ditches Lin.Ft.	Ponds Sq.Ft.	Man Hours
Alabama Arkensas California D. C. Florida	3 11 2 1 9	25 36 17 58	1,867	137	1,200	12,900	8,840 58,451 1,500 23,738 120,674	13,750 9,913 26,352 32,605	15,200 3,737,870 546,274 677,755	2,922 22,649 2,484 3,960 30,085
Georgia Illinois Indiana Kentucky Louisiana	10 1 3 8	57 10 14 16 142	33,631	16	5,240	196,446	39,627  2,300 214,856	15,550	1,561,282 2hh,177 80,098 2,295 4,865,008	18,323 1,200 828 4,412 69,845
Maryland Mississippi Missouri North Carolina Oklahoma	26.462	7 9 14 48 10					16,310 25,020 2,885 59,569 79,985	13,075 18,305 23,085	120,900 1,574,925 291,440 538,080 2,206,291	4,084 12,012 3,560 18,613 3,792
Puerto Rico South Carolina Tennessee Texas Virginia	6 38 14 4	17 43 40 153 21	1,660	7,244	3,465,110 883,765	8,633,332	364,601 155,662 103,618 376,258 35,606	152,882 51,364 8,175 199,440 648,858	728,042 6,396,028 3,392,186 975,060	59,059 14,212 10,879 49,130 14,786
Total	104	631	52,882	7,666	5,127,320	325,299,966	1,689,500	1,446,304	27,952,851	346,835

		1			JULY 1 - DE	CEMBER 31, 1942				
Alabama Arkansas California D. C. Florida	=======================================		11,503 31,304 8,562 1,750 35,493	5,246	11,1,970 11,258,231 104,510 159,611 3,207,982	18,824,750 241,306,269 6,686,025 522,366 353,657,228	114,696 535,376 155,634 59,360 2,122,596	98,327 293,488 216,522 32,605 478,080	1,196,450 18,038,801 4,243,789 19,391 3,993,153	44,18 144,57 8,64 18,75 183,19
Georgia Illinois Indiana Kentucky Louisiana		=======================================	263 7,339 3,088 23,524 616,356	9,282 1,291 2,294 6,498	3,403,936 1,449,125 69,000 1,758,275 71,790,905	423,931,605 17,483,716 4,212,825 83,781,011 1,433,734,846	546,924 6,305 890 20,034 326,377	583,238 11,655 170,978 146,140 766,983	16,068,575 3,202,811 975,829 2,781,902 4,747,785	115,87° 15,75° 11,29° 43,05° 407,58°
Maryland Mississippi Missouri North Carolina Oklahoma			45,395 8,992 88,578 15,237	10 596 164	7,922,247 198,765 19,312,320 743,217	10,501,519 45,225,369 87,285,069 38,327,446	57,367 445,229 29,605 1,397,346 173,915	58,418 1,068,418 114,275 3,168,378 233,815	321,700 13,417,241 2,449,931 11,839,271 5,180,237	9,29 112,49 31,72 162,12 40,17
Puerto Rico South Carolina Tennessee Texas Virginia	=======================================		6,895 175,673 49,224 212,803 50,746	34,594 3,597 75 2,210 14,615	15,578,669 19,045,270 6,786,714 27,634,035 5,010,615	889,458,548 399,082,317 59,106,585 317,870,756 62,230,315	1,130,534 2,602,343 271,554 1,872,619 331,718	512,476 2,767,029 138,727 1,592,201 8,519,572	2,519,900 88,933,363 8,042,103 39,333,381 4,859,170	292,49; 417,61 74,64; 321,57 123,05;
Total		1	,392,725	83,021	195,575,397	4,493,228,565	12,200,422	20,971,323	234,164,783	2,578,11

#### TABLE II MALARIA CONTROL IN WAR AREAS

NUMBER OF PERSONNEL ON DUTY ON DECEMBER 31, 1942 AND TOTAL PAYROLL FOR MONTH OF DECEMBER

	TYPE OF PERSONNEL												-	
STATE	Commi No.	issioned Pay	Prof	. & Sci.	Sub-I	Prof. (1)	C	A. F.	Cust No.	odial	Tota No.	Pay	Percent No.	of Total
Alabama Arkansas California D. C. Florida Georgia Illinois Indiana Kentucky Lousiana Maryland Mississipi Missouri	1 1 2 2 1 5 2 1	161 285 285 492  143 1,197 667 172	55217 53140 145	1,192 1,067 275 275 1,486 973 550 275 808 2,075	20 62 16 25 4 7 31	218 1,517 976 347 2,654 4,044 617 1,031 4,610 4,50 2,140 783	24223 41134 221	24,3 562 362 345 617 577 120 1457 577 337 120 1457 120	96 141 11 16 168 87 14 4 49 389 22 87 26	9,203 14,009 1,622 1,715 17,358 8,522 1,473 400 5,035 39,883 2,518 8,811 2,694	106 161 21 22 196 121 22 7 63 439	11,017 17,140 3,292 2,967 22,607 14,076 2,760 9,88 7,331 48,342 3,630 12,779 4,961	3.18 4.8 0.6 0.6 5.8 3.6 0.6 0.2 13.0 0.9 3.2	3.08 40.99 6.2 3.97 2.02 13.2
North Carolina Oklahoma Fuerto Rico South Carolina Tennessee Texas Virginia	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	300 219	36413	1,192 2,308 892 * 1,21,2 917 2,628 800	95 98 756	1,512 728 4,764 1,142 6,487 767	75242	457 120 479 352 607 337	266 314 1453 389 62 266 158	2,694 26,369 3,520 40,880 6,384 27,757 14,369	29 109 38 287 45 472 427 75 317 169	4,961 30,645 5,404 24,059 47,665 8,795 37,698 16,273	1.1 8.5 1.3 14.0 12.6 2.2 9.4 5.0	6.6
Acdes aegypti Florida South Carolina Texas H. Q. & Dist. (2)	26	8,482	1 4 11	267 745 2,033	143 14 9 33	6,325 961 2,536 6,059	66	375 60 180 8,490	31 -6 8	3,422 570 780	78 15 20 11/4	10,389 1,021 4,131 25,843	2.3 0.4 0.6 4.3	2.7 0.3 1.2 7.0
Total Percent of Total	43	12,547	109	23,366	324 9•5	50,668 14.9	121, 2.6	16,231	2,783	237,194	3,383 150.0	364,063 100.0	100.0	100.0

<sup>\*</sup> Figures not available
(1) Includes Entomological Inspectors
(2) Includes Headquarters and District offices, malaria survey, special investigations and employees tempérarily attached to Headquarters pending assignment to States.

# MONTHLY REPORT Malaria Control in War Areas December 1942

Cooler weather reduced anopheline breeding to a new low in December. By the end of the month, larviciding had ceased in all but 20 areas in Louisiana, Texas and Puerto Rico. Roughly 50,000 gallons of oil and 7,700 pounds of Paris green were used in December as compared with almost 150,000 gallons of oil and 19,000 pounds of Paris green used in November. Only 15% as much oil and 38% as much Paris green were used in December as in September when the larvicidal program was at its height.

The number of areas in operation decreased from 118 in November to 104 in December. Minor drainage continued throughout the month in all operating areas. Man hours used in larvicidal and minor drainage work were 10% less in December than in November. Table 1 shows data on the larvicidal-minor drainage program for the month and cumulative figures from July 1 to December 31. Table II shows data on the number of employees and the payroll for December.

Major Drainage - The number of major drainage projects almost doubled during December. Of the 37 in operation, 15 were new projects started during the month, 14 were projects begun in November and 8 were begun in October. Besides incidental clearing and cleaning, to date, over 173,270 linear feet of new ditch have been constructed and 258 acres of surface water eliminated. These accomplishments should effect a saving of some 130,000 gallons of oil and

TABLE III
MALARIA CONTROL IN WAR AREAS
USPHS MAJOR DRAINAGE PROJECTS

DECEMBER 1 - 31, 1942

STATE	No. of	Clearing Brushing	Channel or Ditch Cleaning		tohing	F111	Ditch Lining	Underground Drains	Water Suri	
	Projects	Acres	Lin.Ft.	Lin.Ft.	Cu.Yds.	Cu.Yda.	Sq.Ft. Lin.Ft.		Acres	Hours
Alabama Arkansas Illinois Indiana	1 2 1	3.0 5.78 •3	7,160	1,194	184	75	00 00 00 00 00 00 00 00 00 00 00 00		7.8	12,044 2,576 16
Kentucky Mississippi Missouri North Carolina	2 31 4	.77 .04 54.6	1,380 20,118	500 5,270 1,200 17,386	615 918 180 5,374	2,043 2,736			1.55	2,764 4,170 1,589 23,313
Oklahoma Puerto Rico South Carolina	1 2 15	3.48 109.82	1,800 102,205	1,000 19,040	3,319	100			69.58	2,090 20,361 51,742
Total	37	177.79	132,863	57,150	15,345	4,983			109.93	120,742
				Ju	ly 1 - I	ecember 3	1, 1942			
Alabama Arkansas Illinois Indiana		16.95 10.6 13.0 0.3 •	3,800 8,815	34,652 140 1,940	21,882	1,175	**************************************		26.1	67,935 3,661 4,020 16
Kentucky Mississippi Missouri North Carolina		2.3 0.8 0.04 294.28	1,380	2,750 5,270 1,200 104,194	1,687 918 180 21,039	24 2,043 10,887		***	1.55	8,689 4,170 1,589 127,147
Oklahoma Puerto Rico South Carolina		128.02	1,105 2,600 114,266	1,600 21,780	121,727	133 336			67.85	4,146 22,007 64,246
Total		470.69	922,068	151,746	173,530	14,800			247.55	307,626

8,125 man days of labor for larviciding each breeding season. Table III shows the progress of major drainage projects in December and presents cumulative figures on major drainage work from July 1 to December 31.

Thirteen major drainage project proposals from nine states, totaling \$153,803.00, were reviewed and approved this month. These December proposals brought the grand total of major drainage project proposals reviewed by the Headquarters Office to 58, with total costs estimated at \$965,323. By the end of January, major drainage operations will have progressed sufficiently to permit presentation of a detailed picture of field activities.

The use of dynamite in major drainage is increasing. In December, this office purchased 18,350 pounds of dynamite, totaling \$2,064.00 for use on projects in Arkansas, Kentucky, Missouri, North Carolina, South Carolina, and Virginia. The comparatively lower cost of dynamiting, especially the reduction in man power, recommends its more general use wherever conditions are favorable.

Major drainage projects now operating under W. P. A. will soon close, following the Presidential order terminating the Work Projects Administration on or shortly after February 1, 1943. At a joint conference in Atlanta, Georgia, attended by representatives of the W. P. A., the Fourth Service Command, and Headquarters office of MCWA, an agreement was reached whereby the Army would take over all malaria control activities conducted by W. P. A. inside military establishments while the Malaria Control in War Areas program would assume responsibility for continuation of such projects outside military establishments which can be approved under established policy.

Equipment - Lists of equipment needed for the 1943 larvicidal season were prepared and steps are being taken to procure these items. It was not possible last year to anticipate all equipment needs early enough to obtain field deliveries in time to meet all operational schedules. Priority restrictions severely delayed production on items requiring critical materials. An early start on next year's needs should prevent recurrence of similar troubles.

Each state participating in the Malaria Control in War Areas program has been requested to inform the Headquarters Office of all W. P. A. projects operating within its boundaries, together with a list of any equipment owned by the W. P. A. Efforts will be made to transfer available construction equipment which may be needed to this program.

In compliance with the requirements of the Office of Defense Transportation it has recently been necessary to secure a Master Certificate of War Necessity and in addition, a Fleet Unit Certificate of War Necessity covering the operation of each MCWA truck. The Fleet Unit Certificates have been distributed to the various trucks.

Changes in the system of gasoline rationing required new gasoline ration books for all Malaria Control in War Areas vehicles - "T" books for trucks and "C" books for passenger cars including station wagons. Since the Master Certificate of War Necessity for trucks is issued to the Headquarters office, all "T" ration books are secured by the Headquarters Office and distributed to the various State and District Offices.

Automotive equipment reports to the Office of Defense Transportation and the Office of Price Administration necessitate a Daily Car and Truck record for each vehicle. These reports include daily use of vehicle, miles travelled, passengers and equipment handled and related data. This requirement has added an additional heavy burden to project operation.

Approximately 500 vehicles (cars, trucks and station wagons) are now in use by Malaria Control in War Areas.

Personnel and Payroll - During the first six months of the Fiscal Year 1943, the number of employees on the program of Malaria Control in War Areas increased from about 2,600 on July 1 to 3,750 at the end of September and then declined to about 3,400 by the end of the calendar year. Turnover in personnel has been rapid; two people have been hired for every one still working.

In this period the establishment of an overtime pay bill by Congress, Victory tax deductions and War Bond deductions have changed the standard payroll forms and procedures considerably and have increased the work load on the administrative sections of both the State and Headquarters offices.

Approximately 2,500 employees of the Malaria Control in War Areas program are obtaining War Bonds through the payroll deduction plan. All records relating to the purchase of bonds are maintained by the Headquarters Office and the bonds are distributed through this office.

Blood Survey - Thick film slides collected in the several states during the fall months are being examined in the Memphis laboratory. In December 3,647 slides were examined. During the month 6,638 slides were stained in Memphis and 13,118 were stained in the North Carolina State Laboratory and forwarded to Memphis for examination.

Plans have expanded for the study of the epidemiology of malaria in the regions touched by MCWA. A detailed plan to correlate the thick film survey findings with social, economic and environmental factors has been made.

Educational Program - In December, a visual education conference was held to consider the sources and quality of available film materials on malaria and other mosquito-borne diseases. A survey was made of motion pictures; showings were given of each picture and discussions held concerning its merits. Plans were projected for the organization of units of visual educational materials on malaria and yellow fever for use primarily in training new MCWA personnel, but it is expected that such materials may have broader use in health education. The plans are therefore being made to coordinate this work with that of the Division of Sanitary Reports and Statistics.

Work was begun on a series of special reports dealing with medical subjects of importance in this program. The first of these will include: "Yellow Fever, with Special Reference to the Present Dangers in the United States", "Dengue Fever", and "Encephalomyelitis". These subjects will be treated particularly from the standpoint of their present menace in the United States and the relation of the MCWA program to them. A fourth subject is "The Measurement of Malaria in the United States, with Special Reference to the Use of Splenometry".

Aedes aegypti Control - As cooler weather almost eliminated outdoor

Aedes aegypti breeding in Texas, the units in each area were instructed to

place primary emphasis on locating and eliminating interior hold-over breeding

places and large permanent "mother foci". Newspaper publicity preceded the

beginning of interior inspections of residences, in order to acquaint the public

with the purpose of the visits. At each station some time was devoted to

giving the inspectors detailed instructions in larvae identification.

The Brownsville unit of the dengue-yellow fever control program was extended to San Benito, Texas to protect a new Civilian Air Patrol Base. In Houston the file index of abandoned cisterns was completed and work was begun on sealing or otherwise mosquito-proofing them. By December 31, one hundred cisterns had been sealed with 2500 pound test concrete at an average cost for materials of 35¢ per cistern.

Before the end of the month, in Galveston, complete records had been secured on over 600 cisterns preparatory to mosquito-proofing. During the Christmas holidays inspections of the interiors of all Galveston schools revealed at least one neglected water container breeding Aedes aegypti in each building. In one school seven such containers were found. A survey was made of Corpus Christi cotton warehouses to locate fire barrels. The locations of over 14,000 barrels were recorded for future treatment with phenothiazine to prevent mosquito breeding.

The December general breeding index at Key West, Florida remained about stationary near the 2.93% level reached in November. Reductions in most of the inspection zones were not reflected in the city-wide figure because of certain troublesome high sections of the city. Five new special zones have been added to the Miami, Florida control area. These included Miami Beach, the City of Opa Locka and the areas adjacent to the Miami Municipal Airport, the Pan American Airport and the Eastern Air Lines Airport.

The Selective Service called the second and last entomologist assigned to the Charleston, South Carolina area since August. Control work continued on a routine basis under direction of the chief supervisor.

Expenditures - About \$411,200. of Public Health Service funds were encumbered during December. The approximate amounts are as follows:

.01	Personal Services	\$364,062
.02	Travel	14,278
	Transportation	41
.04	Communication Services	1,173
.05	Rents and Utility Services	1,334
.07	Other Contractual Services	8,750
.08	Supplies and Materials	17,697
.09	Equipment	3,860
	Total	\$411,195

## COMMUNITY EDUCATION FOR MALARIA CONTROL A Supplementary Malaria Control in War Areas Program

Soon after the beginning of the Malaria Control in War Areas program in the spring of last year, it became obvious that complete protection of troops and war workers could not be achieved by the program in those instances where the people spend a considerable portion of their time in uncontrolled malarious areas. Evening walks through rural areas five to ten miles from camp are common. Military personnel and war workers sometimes reside singly or in small groups at some distance from protected zones. The necessity for finding some method of reducing the endemic malaria reservoir in these broader areas led to the development of a program for Community Education in Malaria Control.

Plans for an experimental program for the 1942 season were prepared in collaboration with the Chief of the Field Activities in Health Education Unit of the Division of Sanitary Reports and Statistics. The plan adopted was presented to the State Health Officers of several states in a memorandum on May 30 for a program to go into effect two weeks later. Because of the necessary speed, the limitations of supervisory personnel and the experimental nature of the project, the program was limited to twenty-six counties in seven states.

Assistants in Health Education were employed for the counties where the program was undertaken - in most instances on the recommendation of the local Health Officer. The persons employed were principally school teachers who were unoccupied during the summer months. In selecting personnel, emphasis was placed upon a background of public relations and scientific training. The

#### RESULTS OF COMMUNITY EDUCATION PROGRAM-1942 PEOPLE LEARNED ABOUT MALARIA THEY DID SOMETHING ABOUT IT 1,050 HOUSES SCREENED 468 ATTENDANCE 38,648 PERSONAL CONTACTS HOUSES - SCREENS REPAIRED 10,487 1.529 DISPLAYS AND EXHIBITS PONDS OR DITCHES CLEANED 139 NEWS ARTICLES 362 RADIO PROGRAMS 63 PLACES SPRAYED, DUSTED, OR OILED 796

twenty-six persons employed assembled in Memphis on June 16 for a ten-day intensive training course in malaria and in Techniques of Community Education. They were acquainted with effective methods for working with individuals and groups in their own communities to the end that the people of the community will face and study their own problems and find ways to solve these problems themselves.

The educators returned to their communities with a well-balances perspective regarding their own positions. The training they had received had convinced them that the subject was so broad that they could not possibly be experts after only two weeks exposure to it. They understood fully that their work would be directly under the County Health Officer in each instance and they would be members of his staff subject to his direction. They would have the advantage of continued advice and consultations from Health Education Supervisors. The administrative relationships of these health educators is indicated on the chart on the inside cover. The counties in which the program was conducted are shown on the map on the back cover.

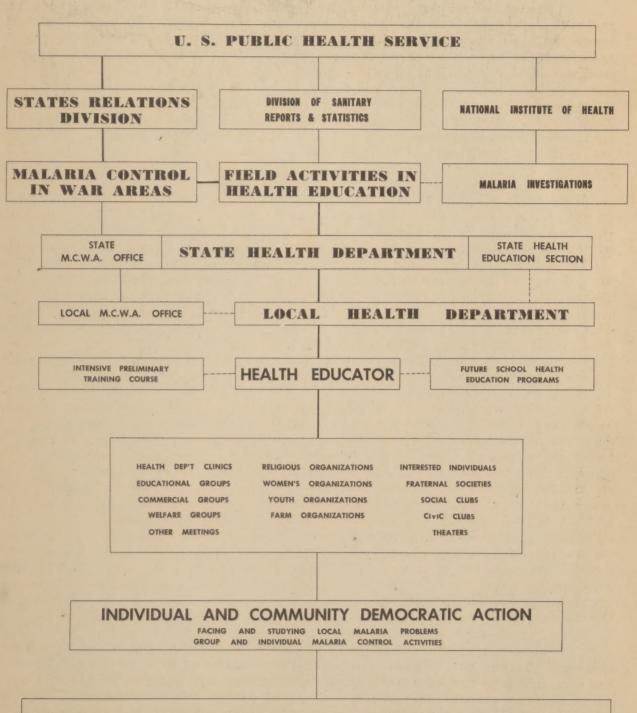
The results of the program justified the earlier hope that some definite and tangible results would be visible. A summary of the incompletely reported results appears in the table at the bottom of Page 7. The present low malaria rates and the inadequacy of the available methods for measuring malariousness make it impossible to state in terms of malaria incidence just how effective this supplemental educational program was in reducing the endemic malaria reservoir in war areas around which it operated. However, since the procedures which are being used in attacking the insect vector on the regular program are effective, it is safe to conclude that the results of this program, which achieved similar action in areas outside the one-mile control zones, will contribute materially to decreasing the opportunity for infection of war-connected personnel whose protection is the objective of the Malaria Control in War Areas program.

The significance of the contributions made by the educational program reach beyond the immediate observable effects. A firmer entrenchment of the position of the County Health Department; a greater spirit of cooperation between the school and the health department and the inevitable carry-over of the program into the schools by the teachers when they return to their regular work; the effect of this program on establishing comprehensive health education programs in several health departments and many school systems; the demonstration of what can be done in health education in counties with a small budget; the stimulation of people to face their own problems and do something about them themselves; the increased likelihood that local groups will continue malaria control programs after emergency funds are withdrawn; and the successful demonstration of democracy at work in the realm of communities facing their health problems, are contributions which in broad perspective may be as important as the direct contribution which has been made to malaria control efforts.

With one or two exceptions, the State and County health officials were not only pleased but enthusiastic with the results of this program. These results indicate the advisability of carrying on the program in all the war areas where malaria control projects are operated during the next season. The first season's small scale experiment having proved so successful, the educational program will be expanded to become a standard part of the attack on the malaria problem by the Malaria Control in War Areas program.

# COMMUNITY EDUCATION FOR MALARIA CONTROL IN WAR AREAS

ORGANIZATION OF 1942 PROGRAM



PROTECTION OF HEALTH OF MILITARY PERSONNEL AND WAR WORKERS

